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ABSTRACT

The Homestead Campus of Miami-Dade Community College, in Florida, serves a sparsely populated area with a culturally diverse population including migrant farm workers, prison inmates, and U.S. Air Force personnel. To increase access to college services, the campus focused on implementing a computer-based distance education program as its primary technology initiative. The campus undertook an analysis of the costs and benefits associated with implementing the program to determine its viability as an academic alternative. Benefits determined for the distance education program included an increased market, allowing the campus to expand enrollment; improved productivity, by embracing the concept of student-centered facilitated learning; and decreased facilities investment, since distance programs do not require physical space. Considerable costs were also determined, however, including costs for equipment acquisition or adaptation to expand existing computer networks and electronic mail systems; for personnel in the areas of technical support, technology training, instructional design, and program support; and for curriculum development to adapt courses to distance delivery. While start-up costs of distance education can be high, the return on investment can be significant, providing a wide array of institutional benefits. (KP)

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Planning for Computer-Based Distance Education:

A Review of Administrative Issues

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Introduction

Computer-based distance education can be defined as the delivery of instruction to remote locations using a variety of technological approaches to support delivery. The implementation of a distance education program allows a higher education institution to offer academic programs to a broader audience, without requiring that the students be in residence. Ehrmann (1991) refers to this expanded potential audience as the New Majority. These students include those learners whose life circumstances permit them neither the time nor opportunity to study full-time on campus. Traditional scheduled instruction does not provide these students with the access to education that they need. Distance education programs enable an institution to target the New Majority by providing instruction at times and locations more appropriate to their life styles.

An effective computer-based distance education program can provide instruction wherever the student is located and whenever it is convenient to the learner. Classroom space need not be scheduled. Class size need not be limited by physical constraints. Faculty need not be present on campus to conduct instruction. Fascinating and beneficial scenarios can be imagined as a result of implementation of such a program. A discussion of a literary work could be held in a computer-based forum with faculty, students and nationally recognized experts contributing via keyboard. Students could view an instructional video tape and respond, ask questions, or discuss concepts presented in collaborative groups by means of electronic mail. No physical classroom is necessary for this literature class. The faculty member could be attending a conference at the time an electronic forum is scheduled and still not miss class. He or she need only use the telephone and computer with modem to call the

class to order. Students do not need to rearrange pressing schedules to attend an on-campus session. Instruction becomes more accessible to all, while demand on facilities is reduced.

The falling cost of technology, the pressing need for more academic space for students and the increasingly harsh economic reality of public institutions, combine to make the potential of an academically sound computer-based distance education significant for higher education. Carl (1991, p. 67) points out that "the very existence of a college or university may rest upon that institution's ability to attract and serve this newly defined and widely geographically distributed [student] population." Yet with all of its promise, the decision to implement a distance education program requires careful consideration of a number of administrative issues. The potential of reaching the New Majority must be weighed against the factors that can affect the overall effectiveness of a distance education program, including budgetary, personnel and curriculum issues (Milheim, 1991).

The administrative decision to implement a distance education program must be based upon a careful analysis of *cost vs. benefit*. Effective distance education programs require the allocation of a variety of resources. These resource expenditures constitute the overall cost of the program to the institution. In return, the institution expects benefits to ensue as a result of the investment of resources. If, after careful analysis, benefits exceed costs, the institution should consider a distance education program as viable academic alternative. This paper will explore the costs and benefits anticipated by Miami-Dade Community College, Homestead Campus prior to adopting the implementation of computer-based distance education as a primary technology initiative.

Benefits of Computer-Based Distance Education

Increased Market

Homestead Campus is located in the extreme south end of Dade County, Florida. Unlike its sister campuses, the area in which Homestead Campus is located is not yet densely populated. In addition, the population served by the campus is culturally diverse, ranging from migrant farm workers to the active duty personnel of Homestead Air Force Base. When formulating the campus Educational Plan, administration recognized the need for innovative approaches to delivery of instruction in order to meet this diversity of life styles. An effective distance education would provide a flexibility of delivery that traditional programs could not. Students whose life circumstances required them to work long hours would be able to access education at non-traditional times. Military personnel sent abruptly away on temporary duty would not have to interrupt their academic term if they could access instruction via computer. Inmates at a nearby state correctional facility could be provided with rehabilitative educational programs. A distance education program would give Homestead Campus the potential to provide service to the diverse population that would not otherwise have enrolled in traditional on-campus courses. And, with its proximity to the Caribbean and South American markets, an effective distance education program could well expand to include South Florida's Latin neighbors. For a new campus like Homestead, needing to expand enrollment, or for an existing campus interested in expansion but lacking the necessary physical space, distance education provides an opportunity to reach markets not yet served by traditional offerings.

Improved Productivity

The distance education instructional design model at Homestead embraces the concept of *facilitated learning*. The curriculum shifts from teacher-centered to student-centered courses. The faculty takes on the role of facilitator of the student's learning experience. Unlike a more narrowly defined independent study format, facilitated learning keeps the faculty member actively involved as support in the teaching learning process. When the technology to support this role is fully implemented, faculty will regularly interact with students via computer and telephone. Since there will be no formal meetings, other than a possible orientation session, the faculty member will not be required to be in a classroom a given number of hours per week. Instead, electronic classes will be held throughout the term with a faculty member presiding. This environment provides greater time flexibility for the faculty. This, in turn, increases the time available for planning and structuring the courses. Mundane tasks can be identified, organized, and delegated to faculty assistants. With more planning time and with assistants available, a faculty member would be able to facilitate more students. This, in turn, translates to greater faculty productivity without straining professional capacity. A well-structured facilitated learning course can relieve faculty of less important instructional duties and allow them to concentrate on the teaching learning processes of a wider audience. The faculty member's teaching talents are used more effectively to benefit more students. Technology, teaching assistants, and innovative instructional design provide the necessary support.

Decreased Facilities Investment

Space for instruction continues to be a critical issue in higher education. In the case of Homestead Campus which is located in the center of the city, available land is limited. For other campuses with sufficient land, building costs impinge upon their growth. In either case, the number of students needing access to education continually outstrips the available classroom space. An effective distance education program can alleviate some of the demand for additional facilities.

The facilitated learning experience is not appropriate to all students or all curriculum areas. Some students prefer the structure of traditional programs. Some courses cannot yet be effectively delivered via technology. But for whatever percentage of courses and students that can remotely "attend" classes, an equivalent reduction of demand upon facilities occurs. Less classroom space is needed to provide the same instruction. Current facilities could accommodate more classes. The need for land acquisition and additional buildings would be reduced proportionately.

Improved Access

Community colleges include within their mission, service and support of all segments of the community. Access is the first step to power. Access to education empowers the members of a community by providing them opportunities to fulfill their individual potentials. Improving access through distance education programs increases the community's power to change and improve its conditions. The implementation of a distance education program serves and supports the community by improving access to the diverse courses and programs offered by the institution. Homestead Campus anticipates that its distance education initiative

will improve access for the military, home-bound, incarcerated and overburdened potential students within its boundaries.

Computer-based distance education can also improve institutional access to academic resources. While new facilities and academic resources are under development, Homestead's current resources remain limited. The equipment being acquired for distance education can also be used to provide to the campus access to outside on-line resources. By connecting to national and global networks, Homestead campus can join the global educational community and can access academic resources well beyond those available on campus. Faculty, students and administrators can tap into knowledge bases that might never be physically available on campus. Improved academic access to relevant data and professional networks is a by-product of the implementation of a computer-based distance education program.

Costs of a Computer-Based Distance Education Program

Like many technological initiatives, computer-based distance education requires a significant up-front investment. Start-up costs for a technology-based program are, by their very nature, higher than the costs of more traditional programs. Like most programs, however, these costs should be amortized over the life of the program. Still, a relatively high initial investment is required in order to implement an effective computer-based distance education program. The necessary investment can be considered in terms of three specific cost areas. These include equipment acquisition and/or adaptation costs, personnel costs and curriculum costs.

Equipment

The greatest cost is the acquisition or adaptation of the technology necessary for distance delivery. Effective distance education uses as many technological approaches as possible in order to meet the needs of the widest spectrum of learners. Minimally, print materials, audio tapes and/or video tapes serve to provide a foundation delivery system. For some institutions, this base delivery system may require an investment in additional printing equipment or facilities for audio or video taping. Institutions interested in broadcast video or interactive video systems face additional expenditures in those technologies. Homestead Campus has opted to focus initially upon computer-based delivery.

Computers enhance the base delivery system by providing faculty/student interactivity as well as providing another instructional delivery device. While distance education programs can use available personal computer networks as a backbone, other equipment must be added in order to support the flow of student and faculty communication. At Homestead Campus, the existing network is being expanded to include a communications server and additional telephone lines. Some of the campus' voice mail boxes will be used for distance education courses. Electronic mail is being expanded to provide student access. Additional modem-equipped computers will be added to the campus' computer inventory to loan to students and to set up in public access sites such as county libraries. When the computer-based distance education program is fully implemented, a more powerful host computer and appropriate delivery software will be acquired. If the campus determines it wants to extend markets beyond local calling zones, long distance access will have to be added.

All of these technologies require a substantial initial resource allocation. Once in place, however, the equipment can be used to support not only distance education initiatives but it can also serve the campus administratively. Computers function as stand-alone productivity tools at both staff and professional levels. Networks provide all personnel with communications capabilities. A powerful telecommunications host computer can provide the campus a variety of computing capabilities unrelated to distance education. These additional services must be factored in when determining the true cost of the equipment. After the initial investment, the maintenance costs are typically considerably less. Repairs and upgrade expenses must be factored into the cost equation but are usually only a fraction of the initial investment.

Personnel

Technology in education requires support. Equipment needs to be installed and maintained. Software needs to be created and/or installed. Once the technology itself is in place, end users must be trained in its use. All of these functions add up to an investment in personnel. A computer-based distance education program will not function without adequate support. Regardless of the quality of the curriculum or the capabilities of the technology, if the human element is lacking, the program will be crippled.

The Homestead Campus has recognized the need for support in four specific areas. First, technical support is necessary in the area of network maintenance, hardware installation/repair and software installation/maintenance. A qualified technical staff is being expanded to include specialist in each of these areas. In addition, an electronic mail Help Desk has been implemented to facilitate responses to campus computing problems. Equipment

must be fully installed and supported to facilitate end user success. A computer-based distance education program starts and stops with the technology it depends upon.

The second area identified as a critical need in terms of personnel is technology training. The end user of technology typically has neither the time nor inclination to learn to use software or hardware. A sound educational computing program provides specific and appropriate training opportunities in order to put the technology in the hands of the end user as quickly and effortlessly as possible. In distance education, faculty must be trained in the technology in order to use it in the teaching learning process. To the greatest extent possible, the hardware and software involved must be transparent to the faculty member. He or she must address the curriculum issues at hand and should not be distracted by the technology used in the delivery process. Students need to be able to use the equipment to access the instruction without concern for the technology itself. For these individuals as well, the technology needs to be as transparent as possible. A well designed training program for both professionals and students reduces the threat and obtrusiveness of the technology. The institution interested in computer-based distance education must recognize the need for an investment in training. Homestead Campus has developed a broad and growing training program using a variety of strategies. This program is constantly evolving as the campus adds technologies in support of the distance education program.

The third area of personnel investment is in the area of instructional design. A course presented via computer-based distance education must replicate the content and effectiveness of an on-campus course. The design of these courses must differ to accommodate the unique delivery method. The development of effective distance education curriculum requires careful

attention to instructional design. An institution must be willing to allocate personnel resources to support the efforts of an instructional design professional in modifying courses for distance delivery.

The final area of critical need for distance education personnel is staffing for program support. Distance education requires a well planned administrative structure to facilitate the communications and exchange between institution and distant student. Implementation of the structure requires secretarial, clerical and para-professional support. Secretarial and clerical support is needed to handle information flow and clerical duties. Para-professionals are needed to assist teachers with their student load. Because the student interacts at a distance, contacts with the institution are less frequent but more meaningful. An effective distance education program provides a student interface that is warm, responsive and competent. This can only be done through adequate staffing.

Curriculum Development

With technology in place and adequate personnel assigned, a distance education program must begin the adaptation of courses to distance delivery. Curriculum development is a valid and significant cost in implementing a distance education program. After training faculty in technology, instructors must then work with an instructional designer to adapt traditional instruction to the new delivery system. The cost of this effort in terms of release time or additional compensation contributes to the total cost of a distance education program. Evaluation of the adapted curriculum and subsequent revisions are further costs in developing a quality distance education program.

Homestead Campus uses a system of *task points* to compensate faculty for their curriculum development efforts. Task points are awarded according to the complexity and length of the task at hand. Homestead's distance education program will be piloted in the Business and Technology Department. Faculty in that department receive compensation for redesigning their own curriculums in the facilitated learning format. Once all of the distance delivery technologies are in place, these facilitated learning courses will be further adapted for off-campus delivery. Curriculum development, implementation and evaluation costs must be planned for in the implementation of a distance education program.

Conclusion

Kurshan (1991) notes that educators must begin to consider a broader vision of the learning environment. She suggest the new vision include the concept of the global classroom linked by telecommunications highways. A computer-based distance education program is a first step toward this broader vision. An institution creating and implementing a computer-based distance education program creates the foundation for access to the global classroom and the academic resources available through it.

Computer-based distance education is a comprehensive program that requires extensive investment. The return on the investment can be significant and can provide a wide array of benefits to the institution. Each institution considering distance education must carefully weigh each element of the cost vs. benefit equation. Internal and external factors must combine favorably to make a distance education program a viable initiative. However, for institutions able to add a distance education component to their academic plan, the outcome is likely to be a cost effective educational program appropriate for the Information Age.

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